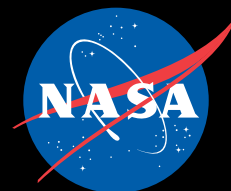


National Aeronautics and Space Administration



# IT Talk

April - June 2014

Volume 4 • Issue 2

## The Next IT Decade



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## Message from the NASA CIO

2014 is proving to be a busy year for us. A lot of good work is being done at the Centers. In this issue we will take a look at the challenges and changes we face in IT over the next decade. The emerging trends of Work From Anywhere and Bring Your Own Device have become top priorities at the Agency. Many departments in the Office of the Chief Information Officer and IT groups at Centers have been actively working on how this technology will fit into the NASA environment.

In addition to mobility, we have a lot more to look forward to, such as

- ◆ Big Data and Data Analytics
- ◆ Improved security at the data source
- ◆ Internet of everything: people, processes, things, data
- ◆ Leveraging Center capabilities as an Agency service—not just 10 separate Center services
- ◆ Defining OCIO's role as “brokers” and “consultants” of these services.

My hope is that you will continue to embrace NASA IT and keep an open mind in all that we're doing.

*~Larry*

## New York City Named as the Main Stage for Space Apps 2014!

NASA and other space agencies around the world are preparing for the third annual International Space Apps Challenge, which will be held April 12–13. Participants will develop mobile applications, software, hardware, and data visualization and platform solutions that could contribute to space exploration missions and help to improve life on Earth. New York will serve as the main stage for this two-day code-athon-style event, which will be locally hosted at nearly 100 locations spanning six continents.

It will bring tech-savvy citizens, scientists, entrepreneurs, educators, and students together to collaboratively solve challenges relevant to both space exploration and social issues. This year more than 40 challenges

will represent NASA mission priorities. These challenges will be organized according to five themes: Earth Watch, Technology in Space, Human Spaceflight, Robotics, and Asteroids. Approximately half of the challenges belong to the Earth Watch theme and support the NASA Earth Campaign.

The best solutions will be selected for global awards at each of the host venues around the world. Winners will be given the opportunity to attend a NASA launch event. (Award recipients will be responsible for all travel costs.)

For more information, visit the International Space Apps Challenge Web site at <https://2014.spaceappschallenge.org>. ☿

## Remembering Kelly Carter

On March 7, 2014, former NASA Chief Information Officer Kelly Carter passed away after a hard-fought battle with cancer. She died peacefully at home with the love of family surrounding her.

Kelly started at Goddard Space Flight Center (GSFC) right out of college. She grew up in GSFC Procurement (17 years); served as the Deputy Division Chief of Logistics in the mid-1990s; and spent several years in GSFC's former Information Technology organization before coming to NASA Headquarters, where she was in the Program Analysis and Evaluation Office (PA&E). She eventually became the Chief Information Officer and Information Technology and Communications Division (ITCD) Chief of Headquarters Operations. She retired last year with more than 35 years of Federal service to the Agency.

She left a legacy of excellence everywhere she worked and served as a powerful NASA leader, caring mentor, and close friend to many throughout GSFC, Headquarters, and the larger NASA family. She loved life and lived it to the fullest through her many activities,



including GSFC's softball league and Headquarters' golf tournaments.

Kelly was a true inspiration and someone who was always willing to pitch in and help. She was a pleasure to work with, a real shining star at NASA, a valued colleague, and a good friend.

We will all miss Kelly. She will live in our memories and hearts forever. ☿

# A Roadmap for Enhancing IT Security at NASA

By Valarie Burks, Deputy CIO for IT Security

On November 18, 2013, OMB issued memorandum M-14-03, entitled “Enhancing the Security of Federal Information and Information Systems.” The memorandum provides Federal agencies with guidance for managing information security risk on a continuous basis and builds upon efforts toward achieving the cybersecurity Cross-Agency Priority (CAP) goals.

According to the memo, “the requirement to manage information security risk on a continuous basis includes the requirement to monitor the security controls in Federal information systems and the environments in which those systems operate on an ongoing basis—one of six steps in the National Institute of Standards and Technology (NIST) Risk Management Framework. This allows agencies to maintain ongoing awareness of information security, vulnerabilities, and threats to support organizational risk management decisions.” The Continuous Diagnostics and Mitigation (CDM) program is composed of two primary elements: monitoring and response. The Phase 1 FY 2014 focus areas for the Department of Homeland Security (DHS) CDM Program, including the Federal IT Dashboard, include automating the following subset of information-security capabilities:

- ◆ Hardware Asset Management
- ◆ Software Asset Management (including malware management)
- ◆ Configuration Setting Management
- ◆ Common Vulnerability Management

The Federal dashboard, which will be maintained by DHS, will be focused on managing the highest priority and most serious risks based on risk assessment information and the risk tolerance established by individual agencies.

To support the implementation of the CDM program, DHS coordinated with the General Services Administration to establish a government-wide Blanket Purchase Agreement (BPA) under Multiple Award Schedule 70, which Federal, State, local and tribal governments can leverage to deploy a basic set of capabilities to support continuous monitoring of security controls in Federal information systems and environments of operation. The BPA, awarded on August 12, 2013, provides a consistent, government-wide set of information security continuous monitoring (ISCM) tools to enhance the Federal government’s ability to identify and respond, in real-time or near real-time, to the risk of emerging cyber threats.

The memo further notes: another important benefit of having a robust program for managing information security risk on a continuous basis is the support it provides for ongoing authorization—that is, the ongoing determination and acceptance of information security risk. Rather than enforcing a static, point-in-time reauthorization process, agencies shall conduct ongoing authorizations of their information systems and environments in which those systems operate, including common controls, through the implementation of their risk management programs.

For years agencies have used a passive reaction and documentation approach for assessing IT security controls. CDM demands proactive, data-centric, risk-based action to meet the increasing threat to Government networks.

As the NASA Information Technology infrastructure continues to expand to support NASA mission goals and requirements, the number and complexity of devices continues to increase, providing challenges to the experts responsible for the ongoing assessment of threats and vulnerabilities across the network, systems, and data infrastructures. Potential assaults on NASA IT systems, networks, and data can result in high-impact consequences. Through the CDM framework, data-collection, asset-management, and risk-management processes occur continually across the environment, increasing our situational awareness of the state of our IT assets.

NASA is committed to the successful execution of the CDM program. NASA benefits from this program through the implementation of advanced tools and services, which provide real-time asset discovery and vulnerability management; automated, intelligence-driven response mechanisms; and continuous feedback of data into an enterprise management system that will help to institute an intelligent response designed to reduce enterprise risk and mitigate vulnerabilities.

Implementation of CDM through the ISCM tools will increase automation, efficiency, and effectiveness of the overall enterprise. With the help of the entire NASA IT community, implementation of this multiyear effort should integrate seamlessly with the existing network infrastructure. This will help to ensure the confidentiality, integrity, and availability of the IT assets supporting our NASA mission and allow employees to operate in a more secure environment. ❧

# The Distributed Observer Network: Game Technology at Work

By Mike Conroy, KSC IT-C, Modeling and Simulation Manager

## NASA Simulation

Simulation technologies are part of every NASA program across every life cycle. Teams model components and facilities to see how they look, simulate systems to see how they behave, and inspect the results to decide what to do next. They repeat this cycle as many times as necessary to get things right. Using tools that vary from massively parallel computers to Microsoft Excel, NASA has developed immersive representations of space flight, computational physics, process studies, system visualizations, and work process simulations. These simulations run on supercomputers, networks of computers, and workstations throughout NASA.

## Historical Challenge

Some of NASA’s simulation needs are unique. NASA has large, complex, multidecadal, almost multigenerational systems with life cycles that extend beyond those of the tools, teams, and associated technologies. Validation and operation of these systems can become a challenge when the concepts, interactions, and dependencies embedded in the early system simulations are no longer available. It is not feasible to preserve the computers, codes, and expertise across a 20-year design process. However, access to the results of those simulations are often needed decades after the simulation was developed.

## Standards and Formats

Simulations are driven by knowledge, experience, math, and models. They produce data, validate concepts,

foster understanding, and provide information to support further analysis. Recent efforts have focused on data standards that enable artifacts designed to outlive the tools, systems, and teams that created them. Constellation provided the Model Process Control (MPC) specification for preserving and communicating simulation information. The first tool to read MPC data was the Constellation Distributed Observer Network (DON). DON was based on the Torque game engine and was created under contract by the Valador Corporation. DON provided a distributed immersive view of Constellation simulation data and supported Constellation activities through the end of the program, most notably by sharing flight-element simulations of Constellation's Virtual Mission 1.

### **The Distributed Observer Network (DON) 3**

The past decade has seen significant global investment in consumer video game technologies, capabilities, and peripherals. The IT Directorate at Kennedy first leveraged this investment in 2011 with the Desert RaTS (Research and Technology Studies) Virtual Test Site (released on Android and iOS). Today, DON 3 does the same to meet NASA's simulation, analysis, data distribution, and data archival needs. Pre-release versions of DON 3 supported the 2013 Simulation SmackDown event (an international student project) and served as the basis for prototypes such as the GSDO (Ground Systems Development and Operations) Glass Wall. DON 3 combines the best of the Unity multiplatform game-development environment with touch (PQ Labs) or gesture (Leap Motion) control devices and NASA's MPC data standard to create an immersive multiuser simulation distribution, archive, and analysis capability to support NASA's exploration activities as well as student projects, outreach, and education. A pre-release version will support the upcoming SEE 2014 event this year in April. DON 3 will be available in September 2014 on the PC. ☼

# **Drones See Second Life Mapping Hurricanes—NASA's HS3 Program**

*By Penny Hubbard, CIO Communications, Ames Research Center*

The ARC Airborne Science Information Technology's Hurricane and Severe Storm Sentinel (HS3) is a 5-year combined mission with Agency, industry, and academic entities investigating the processes that underlie hurricane formation and intensification in the Atlantic Ocean basin. Having a limited number of data points from any given hurricane season has been a barrier in the past, as mapping requires sustained measurements over several years. The small sample is a function not just of tropical storm activity but also of the distance of storms from the base of operations.

HS3 utilizes two Global Hawks, one with instruments geared toward measurement of the environment and the other with instruments suited to inner-core structure and processes. Capable of reaching altitudes greater than 55,000 feet, flying up to 30 hours, and storing and augmenting data from multiple satellites, global meteorological analyses, and computer simulations, HS3 is crushing the barriers of small sample gathering and helping scientists to understand the physical processes that control changes in hurricane intensity. Researchers hope to determine the extent to which these intensification processes are predictable.

HS3 addresses the key NASA Earth Science Enterprise (ESE) science goal of studying Earth in order to advance scientific understanding, meet societal needs, and fulfill NASA's research objective to "enable improved predictive capability for weather and extreme weather events." HS3 will obtain the measurements needed both to improve scientific understanding and to transfer that understanding into improved intensity prediction.

To view the fascinating details of NASA's HS3 program, visit <https://espo.nasa.gov/missions/hs3/> or [http://www.nasa.gov/mission\\_pages/hurricanes/missions/hs3/overview/index.html](http://www.nasa.gov/mission_pages/hurricanes/missions/hs3/overview/index.html). ☼



*Above: One of NASA's HS3 Global Hawks in flight.*

*Below: The HS3 Team poses in front of a Global Hawk.*



# SMACK: The Next IT Decade

*By Tom Soderstrom, Chief Technology and Innovation Officer (JPL), California Institute of Technology*

With the pace of technology change being what it is, I like to say an IT Decade is now three years long—and that time span is shrinking. The critical challenges we face with each new IT decade are these: how can we get a handle on the technologies that are going to invade our enterprise, and how can we proactively incorporate them into our next generation of applications and services?

The previous IT decade consisted, by our count, of nine trends: The Pervasive Cloud, Consumer-Driven IT, Eco-Friendliest, Refocused Cyber Security, You've Got Apps, Immersive Visualization and Interaction, Extreme Collaboration Made Simple, Big Data, and Human Behavior. The first four trends have already become cornerstones of everything we do at JPL; the last five are evolving in this direction.

When our team looks at the next IT Decade, we see one megatrend, which we call "SMACK": Social, Mobile, Analytics, Cloud, and Key disruptors. Each of these is a trend, but each is also part of the larger, interrelated trend.

The trends we have identified make up a simple checklist. So when someone in your organization is building or buying an application or service, you can ask, "Have you considered SMACK?"

Here is a breakdown of SMACK's component parts.

**Social** includes social networking moving into the enterprise. We can learn a lot from how apps and services are funded, built, spread, changed, and socialized in Internet space. It also includes crowdsourcing. For us that means how we can attract new groups of people to work on our problems—and, given the stiff competition for IT talent, how we attract people to work at JPL. It also means crowdfunding (e.g., Kickstarter), crowd-development (aka hackathons), crowd-ideation, etc. Naturally, it also incorporates video conferencing from any device to any device. So in developing or

buying an application or service, we will ask whether it draws on Social in a productive or innovative way.

**Mobile** means that we'll take a mobile-first point of view. Today's start-ups predominantly build for mobile devices first. If there is money left over, they develop for the Web. Smartphones and wearable technology will become the heart of our computing. We already use voice, with tools like SIRI, or a gesture interface, as with Microsoft Kinect on the Xbox—but what will come next? Mobile will also include wearable technology, such as smart watches, smart rings, smart armbands, and so on. Other important trends include Augmented Reality and Bring Your Own Experience (a super-set of BYOD).

**Analytics** is the actionable part of Big Data, which is why it makes innate sense to people even as they manage in the hugely hyped Big Data world. In the SMACK checklist we ask development teams whether what they are building collects and makes available enough data to effectively measure its success. Does it collect the metrics to implement automated prescriptive analytics or soft degradation? How does it combine structured and unstructured data? Is it visualizing the data in an exciting and insightful way? Our goal is to create a self-service analytics environment where collaborators can combine different types of data and interact and analyze the data to gain new insights.

**Cloud**, the fourth part of SMACK, asks where we will run the service or application that we're building or buying. Will it run in a private cloud, in a traditional IT data center, in a public cloud, in a hybrid cloud, or in all of them? Perhaps we simply do a prototype in a public cloud and then make changes and upgrades on the basis of customer feedback?

**Key Disruptors** is the final part of SMACK. We ask if this technology will change our lives. If we don't get ahead of it, will it disrupt us? If we do get ahead of it, will it become



a competitive advantage? Cloud computing and the iPhone were both key disruptors, and we got ahead of them to great advantage. A current key disruptor at JPL is 3D printing: we already use it as a brainstorming and design tool and are seeing tremendous benefits. Augmented reality and wearable technology are others in which we can already see great potential.

Any application or service we consider—and anything that will succeed in the next IT decade—must be simple. That means simple to understand, simple to use, and simple to lose: in other words, if it doesn't work out, we can move on and do something else with few consequences. Technology for the coming IT decade also needs to be self-service and participatory so that users can get to it at any time.

With the previous decade of nine IT trends winding down, it's nice to be able to focus on just one. We learned a lot from the Human Behavior trend and have incorporated those lessons into SMACK. We found that it isn't enough to simply hand end users the new technology. Instead, we need to prototype it together with them and provide an IT concierge (virtual and human) to show them how to access it. As you consider what to prototype and what to pilot in your own enterprise, consider the SMACK checklist, which can help you to decide whether something is a fad or worthy of sustained attention. If it is a Key Disrupter and you provide an IT concierge, your organization is likely to see a tremendous return on that investment. ☞

# Work From Anywhere: How to Land That Bigger Office

Les Farkas, Chief Technology Officer, GRC



The consumerization of IT, by means of affordable mobile computing, is creating pressure on businesses to rapidly evolve their concept and definition of what is considered “the office.” As traditionally defined, the office is an expensive facility where employees perform work on-site. Individual professional accomplishment has often been linked with the size of the office the organization provides the employee.

A recent survey conducted by LinkedIn asked over 7,000 professionals which tools and office trends will disappear by 2017. Items on the endangered list included standard working hours (57%), desktop phones (35%), desktop computers (34%), and the corner executive office (21%).

The evolution of the office is transforming from the costly fixed location to a simple backpack containing the IT equipment that enables employees to communicate, collaborate, and contribute. The potential exists for the size of an employee’s office to expand from a 12’ by 12’ room to virtually everywhere.

For NASA to give all its employees that coveted “bigger office,” the keys to success will be to think strategically about how we work, and then to outfit the mobile workforce with tools that will enable users to take their office anywhere. The following are just a few opportunities for the Agency to enable the Work From Anywhere (WFA) principle:

1. View the desktop as antiquated technology. As Center budgets might allow, subscribe to laptops to the greatest extent possible during the next ACES seat refresh cycle. Mobility of a user’s computer is foundational to succeeding with WFA. Incorporate multigigabit 802.11ad wireless interfaces in laptops, positioning end-user devices to take advantage of higher-speed wireless networks. Laptops with docking stations are just as ergonomic as desktop configurations with the added advantage of mobility.
2. Voice over Internet Protocol (VoIP): Combine the laptop and phone by

deploying VoIP softphones on ACES laptops. With infrastructure configured to allow softphone access from any network, users will be able to carry their work phones “in” their laptops.

3. Mobile Videoconferencing: Technology, such as Vidy, permits virtual face-to-face interaction and integration with NASA’s existing ViTS facilities, smartphones, and tablets. Mobile videoconferencing can enhance employee interaction beyond voice-only methods.
4. Leveraging Digital Media: The continued transition from paper-oriented business processes to digital media workflows can enhance mobility and further reduce costs; these changes can, however, have a significant impact on individual and team workflow processes and preferences for hard-copy editing.
5. Agency WFA Program: Establish an Agency-level program that integrates all aspects of the infrastructure (facilities, procurement, human resources, legal, protective services, and the OCIO) to support WFA, seeking out related cost savings. Desk sharing/hoteling/facility consolidation, reduction of carbon footprint, mobile-device management, Bring-Your-Own-Device, gigabit wireless networking (802.11ac), network access control (802.1X), VPN, cloud, and data-loss prevention are just a sampling of the major infrastructure components for development consideration.

Can NASA provide the tools and establish the culture that will let employees perform work from any device, anytime, anywhere? Can NASA decommission two-to-five facilities at every NASA Center to save costs without compromising performance? The possibilities and technologies are there—with a tremendous amount to gain in productivity and employee satisfaction. NASA has the opportunity to take steps now that will realize the vision of a workplace in the future and land that bigger office for its employees...which is everywhere. ☼

## Tech Steps: Taking NASA Anywhere

By James B. McClellan, Chief Technology Officer/JSC

In the world of Information Technology there is a tremendous buzz about Bring Your Own Device (BYOD) and cloud computing as emerging trends. Many departments in the OCIO and IT groups at NASA Centers have been actively working on how these technologies will fit into the NASA environment. In fact, we have already embarked on the journey.

Infrastructure for much of the WestPrime contract is based on the Amazon Web Services (AWS) cloud. The Cloud Computing Service Office (CCSO) is nearing completion of an Authorization to Operate (ATO) on another Amazon service called GovCloud, which provides Infrastructure as a Service (IaaS) so that NASA can start building servers and storage in the cloud in an environment that is both secure and ITAR-rated.

BYOD is a complex subject that poses many challenges to assuring secure access to NASA data while allowing freedom of choice on the selection of endpoint devices. The October–December 2013 issue of IT Talk reviewed mobile-security requirements mentioned in the OCIO Security Memo on BYOD (<http://inside.nasa.gov/ocio/sites/inside.nasa.gov/ocio/files/files/Minimum-Security-Requirements-for-Use-of-Personally-Owned-Mobile-Devices.pdf>). An active OCIO BYOD Integrated Transition Team is working diligently on the formal NASA BYOD policy document that will be forthcoming this spring.

The ultimate BYOD solution will require new management tools focused on protecting the data. One part of a future solution could be to incorporate a Virtual Display Infrastructure (VDI) that allows more secure access to data. With VDI, the data doesn’t leave the server, which is automatically backed up every day, significantly reducing the risk of loss or theft. VDI can be conventionally based in NASA data centers. Cloud-based VDI solutions are coming to market via Desktop as a Service (DaaS). This approach could accommodate scalability issues and Continuity of Operations/ Disaster Recovery (COOP/DR) issues.

Secure cloud access and enhanced freedom on the devices we use will provide the NASA workforce with increasing flexibility in how we do our jobs, making Work from Anywhere a reality! ☼

# Future Technology Trends for NASA: “Working Together”

By Ed McLarney, Chief Technology Officer for the Chief Information Officer, NASA LaRC

An emphasis on complex system work, greater internal collaboration, and more external partnerships are critical elements of NASA's future that will impact Langley Research Center (LaRC), according to Agency leaders.

During a recent Technical Capabilities Assessment Team (TCAT) visit to LaRC, Associate Administrator Robert Lightfoot highlighted the trend for more complex systems work and the need for NASA to pursue partnerships that extend beyond the level of “just getting coffee.” TCAT Lead Lesa Roe noted the necessity for more cross-NASA teamwork.

IT implications for complex systems include interoperability among research, science, and engineering disciplines and among Centers. External partnerships and internal teams will require open, enterprise-level collaboration and knowledge systems. People and systems must work together.

Detailed research reveals the following

global technology trends, which we can apply to complex systems and partnering:

1. Tele-everything and partnering;
2. Computation, miniaturization, and power;
3. Cyber-physical systems;
4. Advanced analytics, machine intelligence, and robotics; and
5. Human-computer integration and augmentation.

Complex systems depend on modeling, simulation, advanced analytics, emergent machine intelligence, robotics, and physical testing systems to (1) amplify existing disciplines' work, (2) enable completely new work, and (3) integrate multiple discipline components into systems. All these techniques will increase the demand for high-performance computing. Also, complex systems will demand standards-based interfaces internal to NASA and with partners. Standardized enterprise adoption uncertainty quantification,

design-of-experiments, and verification and validation techniques will help to generate confidence in NASA's complex systems.

Cross-NASA teaming and external partnering require efficient, mobile, easy-to-use enterprise telework, collaboration, and knowledge systems that promote sharing and protect intellectual property. Human-computer integration and automation will apply to all work, including augmented reality overlays of scientific data.

Beyond the immediate trends, over-the-horizon technologies like quantum computing and human-level thinking machines have great future potential. We must learn about them now so we can adopt them early.

So, where to begin? Most of the technologies mentioned here lie within our reach; we must invest in adopting and adapting them in a coordinated manner, even in a tough economy. With such investments, we can truly “work together” for a bright future. ☞

## A New Solution for Agency Electronic Forms

By Valerie King, NASA Forms Officer/EFI Business Process and Transition Lead (JSC), and Terry Langley, Platform Manager (MSFC)

The transition to the Agency's new electronic forms platform, Adobe LiveCycle, is under way. The Agency/Center form teams expect to convert and migrate all forms to the new solution by the end of FY14. The NASA Electronic Forms site (<http://nef.nasa.gov>) will continue to host links to the forms converted to the new platform until the transition has been completed. The Enterprise Service Desk (ESD) (877-NSSC-123) is providing support via Knowledge Articles (self-help) and help-desk support.

Adobe LiveCycle provides the following benefits:

- Resolves an incompatibility with the Mac OS
- Functions via browser; depending on how a form is deployed, it may open a browser-based interface called Adobe WorkSpace

Additionally, forms designers at each Center will be able to:

- Enable workflow and auto-routing features
- Provide mobile-device accessibility
- Utilize Entrust digital-signatures

FileNet 4.2 form software, which is no longer updated or supported by the vendor, will eventually be phased out from NASA workstations. If necessary, there are options for retaining existing FileNet forms/records for future reference and/or retention requirements:

If the form is available as a fillable/savable PDF, create a functional PDF from the FileNet form data by following these steps:

1. Download a PDF of the form from the NASA e-Forms (NEF) site (<http://server-mpo.arc.nasa.gov/Services/NEFS/Home.tml>).
2. Open the FileNet form on your desktop.
3. Copy and paste the data to the PDF form and save it.

If the form is not available as a fillable/savable PDF, you can create a static (nonfunctioning)

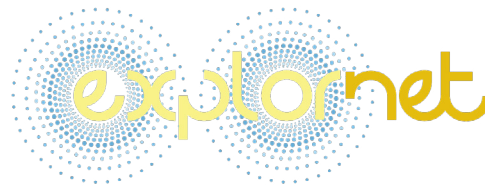
PDF image of your FileNet form (note: you may lose data in expanding form fields):

1. Open the FileNet form on your desktop.
2. Select the File>Save As function.

For additional background information, see the July–September 2013 edition of the IT Talk article at [http://www.nasa.gov/sites/default/files/files/ITTalk\\_Jul2013.pdf](http://www.nasa.gov/sites/default/files/files/ITTalk_Jul2013.pdf). ☞

# ExplorNet is Key to Collaboration at MSFC

By Kevin Jones (MITS/Dynetics Technical Services), MSFC



Is there an app for that? The commonplace attitude that “if there isn’t, there should be” has resulted in a proliferation of IT tools in the workplace. There is an IT solution for almost every problem imaginable. Even with the abundance of options available, however, it is often a struggle to find that perfect fit. Tools are often rigid; and as technologically advanced as they may be, they have the potential to drive business operations instead of allowing operations to be driven by client or project needs. The result can be business processes that are weighed down with inefficiencies, slowing the pace of work and decreasing innovation. Recognizing the opportunity to prevent such problems, Marshall Space Flight Center (MSFC) conducted an in-depth analysis of IT systems and processes.

This study identified four major issues:

1. As customer needs grow, so does the potential for having too many systems. Not only is it difficult to keep track of them from an IT perspective, but multiple systems can confuse end users. Each system fills a niche, but trying to remember when to use one over the other, as well as how to manipulate each one, may become a chore.
2. Information can be stored within each system, but the systems are rarely connected. When similar or identical information is stored in separate systems without a

way to link the data together, the resulting disparity can cause confusion for those who later try to put the pieces together.

3. E-mail is both a blessing and a curse. While e-mail is much more efficient than the systems of 20 years ago, information that is critical to getting the job done is often mixed in with junk. This forces users to go through every e-mail to find what they really need. Because of this, there is now a growing distaste for e-mail. According to a McKinsey and Company research report, 28 percent of an employee’s time is spent sifting through messages in the inbox ([http://www.mckinsey.com/insights/high-tech\\_telecoms\\_internet/the\\_social\\_economy](http://www.mckinsey.com/insights/high-tech_telecoms_internet/the_social_economy)).
4. A trend of conforming processes to how the tools work rather than making tools that conform to the way humans work was identified. Some systems are flat-out unnatural to use. In these cases, the tool may become the master and unnecessarily complicate a task.

To address these issues, MSFC sought innovative approaches that would foster the overarching goal of creating a more collaborative culture. While acknowledging that collaboration tools are constantly growing and evolving, the MSFC CIO recognized that Center employees could no longer wait for such tools to migrate into their workplace. With the support of then-Center director Robert Lightfoot,

ExplorNet was born. ExplorNet is a social/collaborative system that allows people to work in a more natural way. Online interactions mimic face-to-face interactions, making discussion, sharing, discovering, and collaboration easy. The system is now three years old and has hit a tipping point; collaboration over ExplorNet has blossomed through an ever-growing number of groups and communities.

Rather than spending time in the inbox, information can now be consolidated in ExplorNet. Instead of being spammed by a deluge of emails, employees and contractors can each decide what is important to them and choose to receive notifications on only those things, people, or groups. Information can be filtered according to what is critical to get the job done, what is nice to know, and what is junk. This allows time to be spent on the messages that matter most.

We envision the integration of systems not as consolidation into a single structure (for each has its unique role) but as a partnership among systems. They may exist separately, but the human interface for them will be in one place. Systems will integrate in the background, providing employees and contractors with one portal for communicating with other systems and with each other as they find information, collaborate, and discover people and expertise. Users will be able to control the information that comes to them, freeing them up to work on the core, complicated issues that NASA is famous for tackling. ☼

## Another New App for CIMA

In January of this year Marshall Space Flight Center (MSFC) released a new mobile application developed by the Center for Internal Mobile Applications (CIMA) and designed in conjunction with the MSFC Emer-

gency Management Team. The MSFC Emergency Procedures (EP) mobile app enhances the printed version of the MSFC Emergency Procedures Handbook, providing users with 24/7 access to information about emergency protocols. The app also gives the Emergency Management Team the ability to push informational notifications to users in the event of a Center-specific emergency or weather event.

Once the design phase of the mobile app began, it became clear that other Centers might want to leverage this same functionality for their own emergency procedures handbook; so CIMA designed the back-end infrastructure that supports the mobile app with this in mind. The EP mobile app was built using CIMA’s mobile-specific content management system (CMS). The CIMA CMS enables application owners to quickly modify content within the app (including images, call-out buttons, fonts, and colors) for immediate delivery to their users’ mobile devices. In addition, the CIMA CMS can deliver the app’s content to a Web site for users without mobile devices.

The EP app is not the first CIMA-developed mobile app capable of being expanded for use at other Centers. CIMA also worked with GSFC to develop NASA Contacts (Key Personnel), a mobile application designed to quickly locate Center personnel.

Currently, CIMA is working with the Identity Credential and Access Management Team to develop a Personal Identity Verification–derived credential for mobile devices for use throughout the Agency. A small pilot program will begin in mid-April. So stay tuned.... There’s more to come.

For information on how CIMA can help you design and build a mobile application for Center- and/or Agency-wide use, send an e-mail to [msfc-cima@mail.nasa.gov](mailto:msfc-cima@mail.nasa.gov). Our goal is to help NASA employees access the information they need, anytime, anywhere, directly from their mobile devices. Find out more about us at <https://cima.nasa.gov/whatwedo>. ☼



# IT Infrastructure Integration Program (I3P) Update

## End-User Services (ACES)

### **IE9 Deployment to ACES Windows Computers:**

Internet Explorer (IE) 9 was deployed to all ACES Windows computers in late March. IE9 improves security posture and has new features and a new look. Refer to the ACES Web site for resources to assist you in becoming familiar with IE9.

### **Office 2013 Upgrade for Windows:**

ACES seats will soon be upgraded to Microsoft Office 2013. This newer version offers a variety of new features and functions. Users may review new features as well as those that are no longer available in the "Differences between Office 2013 and Office 2010" document located on the ACES Web site. General availability is tentatively scheduled for May 2014, following successful testing in a pilot program.

### **Transition from WebEx to Lync:**

Transition of users from WebEx to Lync Web Conferencing is complete. A new WebEx or Lync seat requires an Enterprise Service Desk (ESD) service request. Changing from a WebEx seat to a Lync seat or vice versa requires two ESD requests. You will need to de-subscribe your current seat and place an order for the new seat. Failure to de-subscribe the seat that is being replaced will result in invoicing for both seats.

### **Mobile Like-for-Like Device Refresh:**

ACES will be conducting Like-for-Like Mobile Device Refreshes for end users who will be refreshing Cellular S-Seat and Smartphone S- and M-Seat offerings with no changes to what they are currently using. Devices will be refreshed to existing seat offerings that are within the same product family (e.g., iPhone to iPhone or cell phone to cell phone), the same carrier, and the same services. The mobile refresh schedule for Centers will be determined in spring 2014 following success of the pilot program now under way. NASA is also actively working to build an automated ordering system to accommodate refreshes to a different carrier or seat type and refreshes with service modifications. Further information about refreshes that do not qualify as Like-for-Like will be provided as it becomes available.

**Nighttime Computer Patching:** Users are reminded that software and security patches are released each Tuesday night between 8 p.m. and 2 a.m. local time to

minimize disruptions during work hours. Computers must be powered on, logged off, and connected to the NASA network to receive weekly patch updates.

### **Enterprise Applications Service Office/NASA Enterprise Applications Competency Center (EASO/NEACC):**

The name change from Dryden Flight Research Center (DFRC) to Armstrong Flight Research Center (AFRC) impacts several lines of business at the NEACC. The Financial team has determined that minimal changes will be needed and that the changes will not be retroactive. Procurement; Human Capital and Workforce (HCW); and Identity, Credential, and Access Management (ICAM) are assessing impacts and scheduling the necessary changes.

The NASA Headquarters Office of Procurement met with the MSFC procurement officer regarding the EPDW Restructure/METRO issue. The NEACC provided evidence demonstrating the impact on security of unsynchronized data, along with figures on the cost of loading two databases. MSFC is developing a timeline for aligning METRO with EPDW Restructure and information on the METRO Security Plan. The Headquarters Office of Procurement anticipates receiving the timeline and security plan information and intends to support a reasonable extension of the dual data feed, contingent upon MSFC's commitment to align METRO with the EPDW restructured database.

The NEACC is consolidating a multitude of existing Service Level Agreements (SLA)/Operational Level Agreements (OLA) into one document to define the relationship between the NEACC and the Business Systems Management Board (BSMB). The initial draft is in review; the approved version will replace all previous SLA/OLAs. Currently, feedback regarding NASA computing services is being incorporated into the document.

The requirements and scope of the Mobile Survey Capability have increased exponentially. The NEACC plans to recommend breaking the requirements into manageable phases, expected to span more than a year. The estimate has been provided for the survey, but the initiative is currently on hold. Mobile apps authentication capability (eAuth) is now in development, with the mobile application version of the One-Stop-Shopping Initiative Analytical Dashboard to follow.

USAJobs release 4.3 is scheduled for April 10, 2014. The changes impacting vacancy builder include previously optional attributes becoming mandatory and the addition of attributes such as telework, security clearance required, and supervisory status. The Office of Personnel Management also intends to normalize the date for various attributes. StaRS Case Management module enhancements will coincide with the USAJobs 4.3 release.

## Communication Services

In support of the IT Infrastructure Integration (I3P) program goal of consolidating, integrating and transforming the Agency's IT service from a Center unique model to an enterprise model, the Communications Service Office (CSO) submitted a Mission Support Council (MSC) Issue Paper in May 2013 requesting funding to facilitate adoption of several major corporate network transformation initiatives. Recently, the CSO received approval to proceed with the following enterprise level projects: Enterprise External Border, Enterprise Internal Border, and IT Service Management (ITSM) Enhancements. The Enterprise External Border project will establish firewall, content filtering and virtual private network (VPN) services at NASA's network perimeter. The Enterprise Internal Border project will establish an internal network access control solution based on a zoned network architecture. This project also includes funding to facilitate some Center network enhancements required to support the network access solution and a standardized, automated network drawing system. The Information Technology Service Management (ITSM) Enhancement project implements improvements and augmentations to the existing NICS ITSM (NITSM) system including implementing additional ITIL functionality. Completion of these projects will provide additional capabilities for consistent security policy enforcement and controls at the Agency network perimeter with increased end-to-end network visibility and responsiveness. They also provide standardized network zoning improving collaboration capabilities, reduced infrastructure costs through consolidation of common services, enhanced efficiencies through service standardization, and support for mobility and "Bring Your Own Device"

initiatives. In addition ITSM enhancements will facilitate improved configuration and change management, service level management, and mobility support for technicians. The enhancements range from incorporating and updating legacy system functionality to implementing more ITIL framework processes to further mature NICS process execution. Project teams will work closely with the End User Service Office, IT Security and Security Operations Center personnel during the project life cycle. In addition, they will leverage Center resources and subject matter experts across the Agency. These enhanced services will be centrally managed and support the overall I3P goal of moving to an enterprise shared service model. Activities for these projects are planned to begin in the spring of 2014 with estimated completion in 2017.

## Enterprise Service Desk

The ESD Release 1.1.4-1 went live March 18, providing the following new capabilities: enhancements to email notifications to customers requesting new services, additional search features for self-service at Tier-0, and additional capabilities to center Subject Matter Experts (SMEs) and Center Integration Leads (CILs) for Knowledge Authoring and Service Definition information. All of these enhancements will contribute to a better user experience.

Future releases are in the final planning stages with release dates expected this summer. Proposed updates for upcoming releases include additional categorization for incident tickets for better routing and reporting; automated reminders for Knowledge Article reviews; easy access to knowledge for service ordering; and updated graphics. Stay tuned for more details and dates.

The third ESD Subject Matter Expert (SME) Face-to-Face (F2F) is a working meeting between the ESD SMEs, ESD Service Office, I3P SOILs and ESD Service Executive. The 2014 F2F will be hosted by LaRC the week of June 16. The purpose of the ESD SME F2F is to review and refine the working relationship between the ESD Service Office and the ESD SMEs. Outcomes of the F2F will include updated policies and procedures for ESD service delivery. Outcomes will be actionable with assigned parties and due dates.

## Web Services (WESTPrime)

WESTPrime is excited to announce the deployment of [inside.nasa.gov/webservices](http://inside.nasa.gov/webservices) <<http://inside.nasa.gov/webservices>>. This internal-to-NASA website will help support the OCIO Web Services mission and act as an information hub for topics such as general guidance & governance; Lessons Learned; training tools for Drupal CSM, as well as information about Blogs & Wikis.

**Migration Update:** WESTPrime began the migration of 42 applications for NASA HQ in March 2014. Working in tandem with HITTS, the first 10 applications are live as of March 16th. The additional 32 applications are slated to go live over the next 4 months, with the migration efforts scheduled to wrap up in July 2014.

**Drupal CMS Users:** Several upgrades to the Drupal Content Management System (CMS) for [www.nasa.gov](http://www.nasa.gov) were implemented in 1st Quarter 2014. Some of the features include a new TV schedule; new calendar content types and widgets; the ability to download videos; the inclusion of YouTube and images on press releases; before/after image slider in feature articles; new RSS feed widgets, and the initial versions of relay from Voice of America and the Drupal media explorer.

Training sessions for Drupal CMS are held monthly. If you use the Drupal CMS and would like to register for a Drupal training session, please contact WESTPrime's Communications team by sending an email to [wendy.l.perez@nasa.gov](mailto:wendy.l.perez@nasa.gov). Sessions are limited to the first 20 registrants so as to provide effective hands on training

**Attention Bloggers:** [Blogs.nasa.gov](http://Blogs.nasa.gov) received a "boost" as WESTPrime deployed a caching layer to allow a greater volume of customers to visit the site, while keeping page load times fast during live events.

**Looking Ahead:** Second quarter 2014 should be exciting! WESTPrime just kicked off the AVAIL Demo project on March 12, 2014. The Agency Video, Audio, Imagery Library (AVAIL) Demo will be a tool the NASA Imagery Experts Program will use to demonstrate an on-line searchable library for accessing NASA video, audio and still imagery results, spanning across all of NASA's public-facing media libraries. Showcasing responsive design, this search-centric application demo will give users a glimpse of what the future holds for NASA's multi-media online search capabilities. ☘



## Powell-Meeks named to Federal 100

*By Mark Whalen, Internal Communications Team Leader, JPL, California Institute of Technology*

Jet Propulsion Laboratory Deputy Director for Information Technology and Deputy CIO Magalene Powell-Meeks has been named to the 2014 Federal 100, an annual list celebrating exceptional leadership and initiative in Federal technology. She is the only NASA honoree on this year's list.

The annual Federal 100 awards are presented to Government, industry, and academic leaders who have played pivotal roles that affect how the Federal Government acquires, develops, and manages information technology. Honorees have gone above and beyond their daily responsibilities and have made a difference in the way technology has transformed their agency or accelerated their agency's mission. The winners were celebrated by their peers at an awards event held on March 20 in Washington, DC.

Prior to her current roles as JPL's Deputy Director for Information Technology and Deputy Chief Information Officer, Powell-Meeks managed the Enterprise Engineering Division, integrating JPL's engineering and IT support functions into a unified technical infrastructure organization. For her "outstanding vision and leadership in architecting, implementing and leading this new JPL Division," Powell-Meeks received a NASA Outstanding Leadership Medal.

Powell-Meeks joined JPL as part of a co-op program in the Instrumentation Section when she was a junior in college. Four years after joining JPL as a full-time instrumentation engineer, she was selected as one of the first JPL Fellows to attend graduate school full-time while earning full-time work pay. Over her JPL career of more than 20 years, she has taken on increasingly responsible roles in engineering and IT management. ☘



IT Labs is proud to announce the next wave of IT innovations funded in the NASA IT Labs FY 2014 Project Call. From a pool of 38 outstanding proposals, IT Labs chose nine projects to fund, two of which are collaborations between several project-proposal teams. The portfolio of projects includes computing, hardware, software, and data-management topics and engages seven different NASA Centers.

The IT Labs team is very thankful for all of the proposals as well as the network of experts and stakeholders that evaluated them, including OCIO service executives, Center CTO-ITs, and representatives from the Office of the Chief Technologist, the Science Mission Directorate, and the Human Exploration and Operations Mission Directorate. Congratulations to all of our IT heroes! For more information, visit <https://labs.nasa.gov> (NDC credentials required).

#### **Cloudbursting—Solving the 3-Body Problem**

Project Lead: Michael Little (LaRC)

Project Champions: Ed McLarney, CTO-IT (LaRC); Tsengdar Lee, High-Performance Computing Program Manager (SMD)

#### **Mobile BYOD VDI Implementation in the Cloud (VDI vs. DaaS)**

Project Lead: Richard Schneider (GSFC)

Project Champion: Keith Keller, CTO-IT (GSFC)

#### **Supercomputing Desktops**

Project Lead: Eric Burke (LaRC)

Project Champion: Ed McLarney, CTO-IT (LaRC)

#### **Cloud-Based HTML5 Toolkit**

Project Lead: Lin Chambers (LaRC)

Project Champions: Edward L McLarney, CTO-IT (LaRC); Roopangi Kadakia, Web Services Executive (Headquarters)

#### **Expanding Interactive Visualization Engine for SysML Tools**

Project Lead: Kathryn Trase (GRC)

Project Champion: Les Farkas, CTO-IT (GRC)

#### **Investigation of Wearable Display and Visualization Technologies for NASA Applications**

Project Leads: Manson Yew (JPL), Laurie Griffin (KSC), Michael Interbartolo (JSC), Project Champions: Tom Soderstrom, CTO-IT (JPL); Ben Bryant, CTO-IT (KSC); Gabriel Rangel (JPL); Chris Gerty (Headquarters)

#### **Investigation of Alternative Human-to-Computer Input Technologies for NASA Applications**

Project Leads: William Little (KSC), Kerry McGuire (JSC), Francisco Delgado (JSC) Project Champions: Ben Bryant, CTO-IT (KSC); James McClellan, CTO-IT (JSC); Chris Gerty (Headquarters)

#### **3-D Printing for Youth Engagement and Social Networking**

Project Lead: Manson Yew (JPL)

Project Champions: Tom Soderstrom, CTO-IT (JPL); Shelly Canright, Director, NASA Elementary, Secondary, and eEducation Program (Headquarters)

#### **Technical Data Interoperability Pathfinder Via Emerging Standards**

Project Lead: Michael Conroy (KSC)

Project Champions: Benjamin Bryant, CTO-IT (KSC); Paul Gill, Manager, NASA Technical Standards Program (MSFC)

Address comments and questions to Allison Wolff, IT Labs Program Manager, at [HQ-NASA-IT-Labs@mail.nasa.gov](mailto:HQ-NASA-IT-Labs@mail.nasa.gov).

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